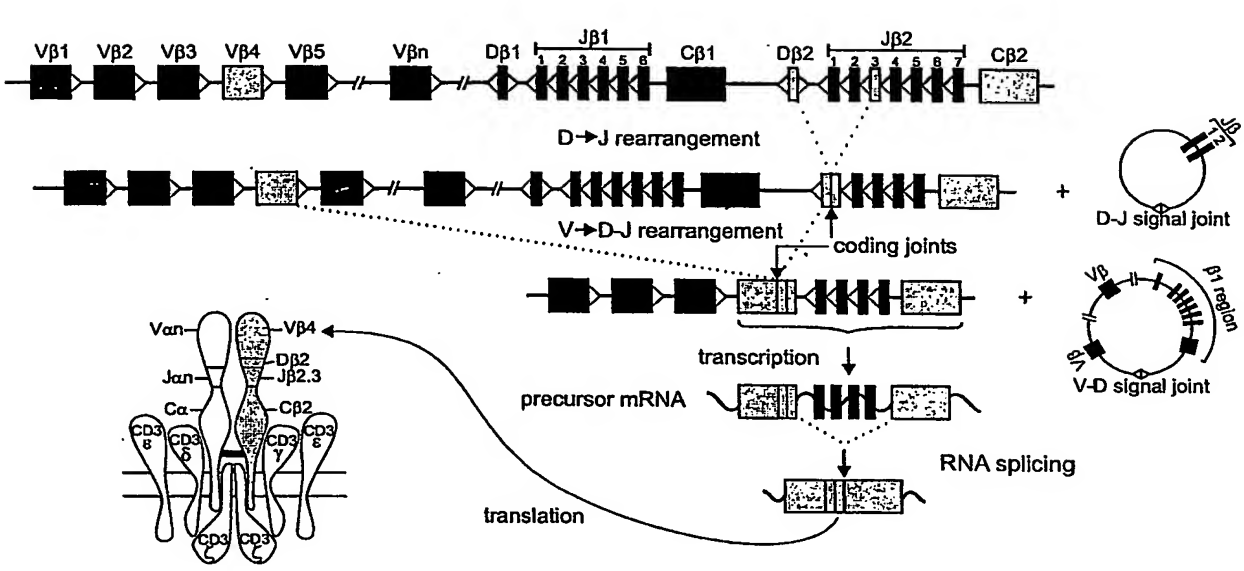
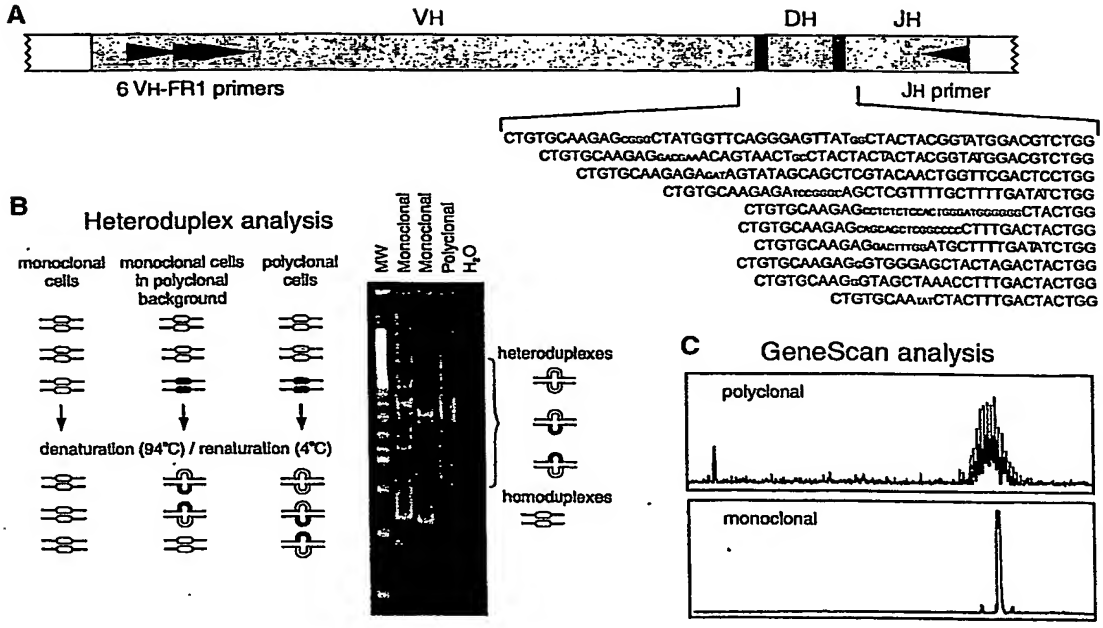

Vβ1
Vβ2
Vβ3
Vβ4
Vβ5
Vβn
Dβ1
Jβ1
Cβ1
Dβ2
Jβ2
Cβ2
D→J rearrangement
V→D-J rearrangement
coding joints
D-J signal joint
transcription
precursor mRNA
RNA splicing
translation
V-D signal joint
β1 region
Vαn
Vβ4
Dβ2
Jαn
Jβ2.3
Cα
Cβ2
CD3 ε
CD3 δ
CD3 γ
CD3 ε
CD3 ζ
CD3 ζ

Figure 1


A
VH
DH
JH
6 VH-FR1 primers
JH primer
CTGTGCAAGAGCGGGGCTATGGTTCAGGGAGTTATGGCTACTACGGTATGGACGTCTGG
CTGTGCAAGAGGACGCAAACAGTAACTGGCTACTACTACTACGGTATGGACGTCTGG
CTGTGCAAGAGAGATAGTATAGCAGCTCGTACAACTGGTTCGACTCCTGG
CTGTGCAAGAGATCCGGGCAGCTCGTTTTGCTTTTGATATCTGG
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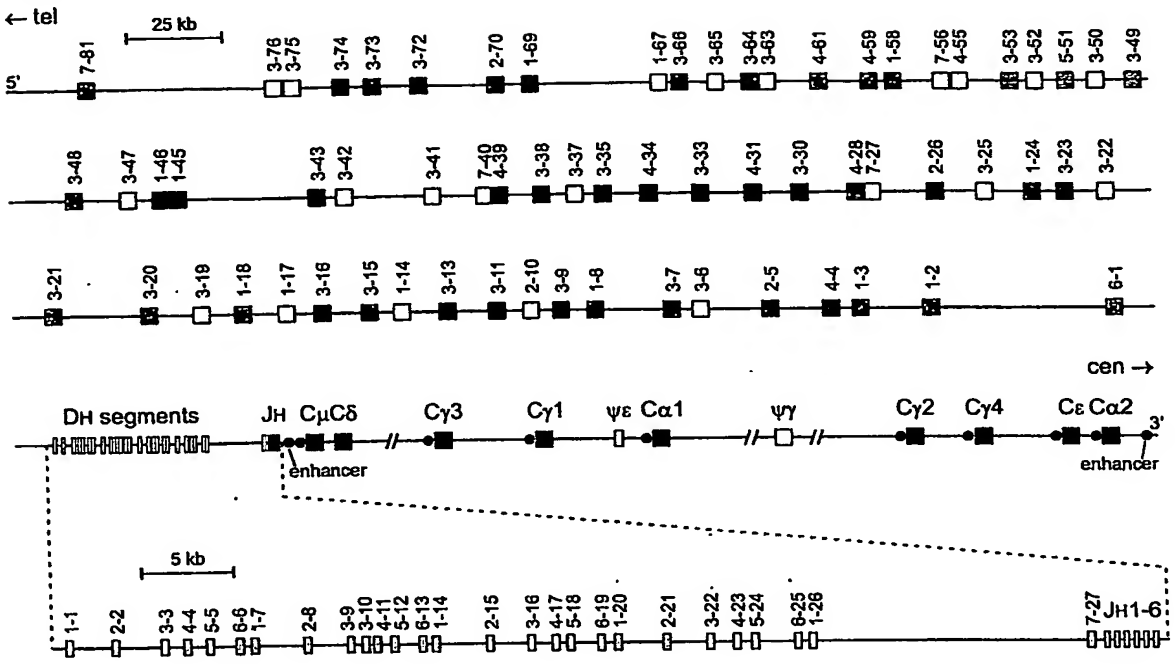
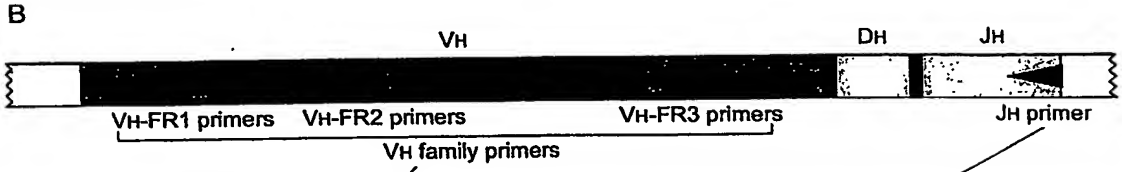
CTGTGCAAGAGCAGCAGCTCGGCCCCCTTTGACTACTGG
CTGTGCAAGAGGACTTTGGATGCTTTTGATATCTGG
CTGTGCAAGAGCGTGGGAGCTACTAGACTACTGG
CTGTGCAAGGCGTAGCTAAACCTTTGACTACTGG
CTGTGCAATATCTACTTTGACTACTGG
B
Heteroduplex analysis
monoclonal cells
monoclonal cells in polyclonal background
polyclonal cells
denaturation (94°C) / renaturation (4°C)
MW
Monoclonal
Monoclonal
Polyclonal
H2O
heteroduplexes
homoduplexes
C
GeneScan analysis
polyclonal
monoclonal

Figure 2

A. *IGH* gene complex (#14q32.3)



B



***IGH* tube A**

			5' 3'
VH1-FR1	(1-2)	(-252)	GGCCTCAGTGAAGGTCTCCTGCAAG
VH2-FR1	(2-5)	(-284)	GTCTGGTCCTACGCTGGTGAAACCC
VH3-FR1	(3-7)	(-256)	CTGGGGGGTCCCTGAGACTCTCCTG
VH4-FR1	(4-4)	(-256)	CTTCGGAGACCCTGTCCCTCACCTG
VH5-FR1	(5-51)	(-255)	CGGGGAGTCTCTGAAGATCTCCTGT
VH6-FR1	(6-1)	(-263)	TCGCAGACCCTCTCACTCACCTGTG

***IGH* tube B**

VH1-FR2	(1-2)	(-192)	CTGGGTGCGACAGGCCCCTGGACAA
VH2-FR2	(2-5)	(-190)	TGGATCCGTCAGCCCCCAGGGAAGG
VH3-FR2	(3-7)	(-189)	GGTCCGCCAGGCTCCAGGGAA
VH4-FR2	(4-4)	(-188)	TGGATCCGCCAGCCCCCAGGGAAGG
VH5-FR2	(5-51)	(-190)	GGGTGCGCCAGATGCCCGGGAAAGG
VH6-FR2	(6-1)	(-194)	TGGATCAGGCAGTCCCCATCGAGAG
VH7-FR2	(7)	(-192)	TTGGGTGCGACAGGCCCCTGGACAA

***IGH* tube C**

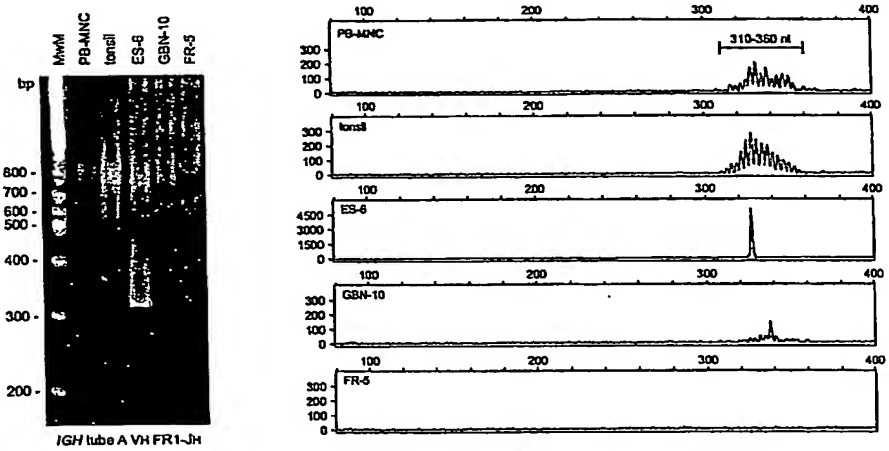
VH1-FR3	(1-2)	(-55)	TGGAGCTGAGCAGCCTGAGATCTGA
VH2-FR3	(2-5)	(-54)	CAATGACCAACATGGACCCTGTGGA
VH3-FR3	(3-7)	(-57)	TCTGCAAATGAACAGCCTGAGAGCC
VH4-FR3	(4-4)	(-48)	GAGCTCTGTGACCGCCGCGGACACG
VH5-FR3	(5-51)	(-69)	CAGCACCGCCTACCTGCAGTGGAGC
VH6-FR3	(6-1)	(-63)	GTTCTCCCTGCAGCTGAACTCTGTG
VH7-FR3	(7)	(-69)	CAGCACGGCATATCTGCAGATCAG

***IGH* tubes A, B, and C**

3' CCAGTGGCAGAGGAGTCCATTC 5' (+57) JH consensus

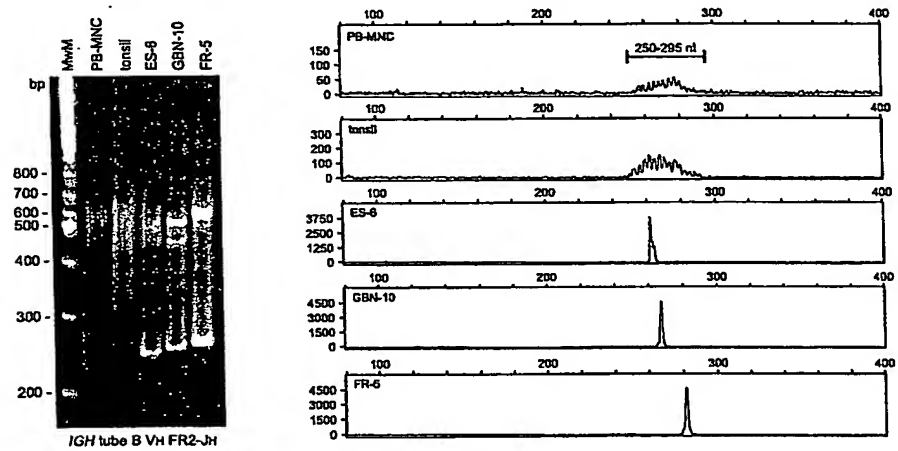
Figure 3 (A and B)

C. *IGH* tube A VH FR1-JH



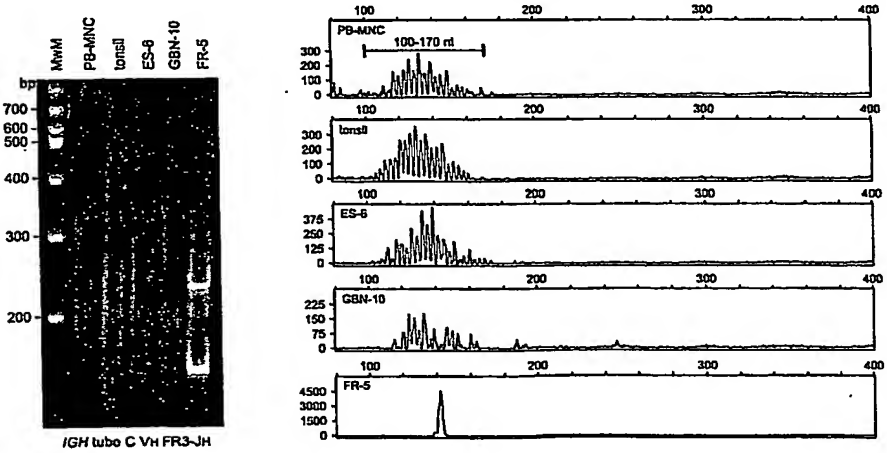
IGH tube A VH FR1-JH

D. *IGH* tube B VH FR2-JH



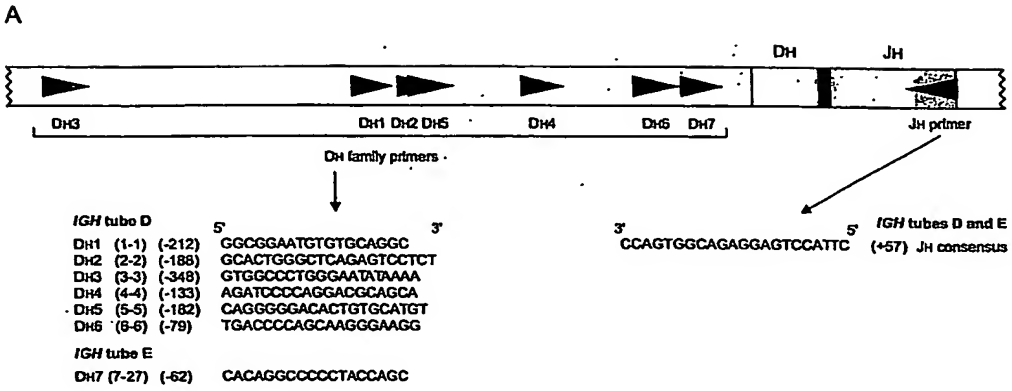
IGH tube B VH FR2-JH

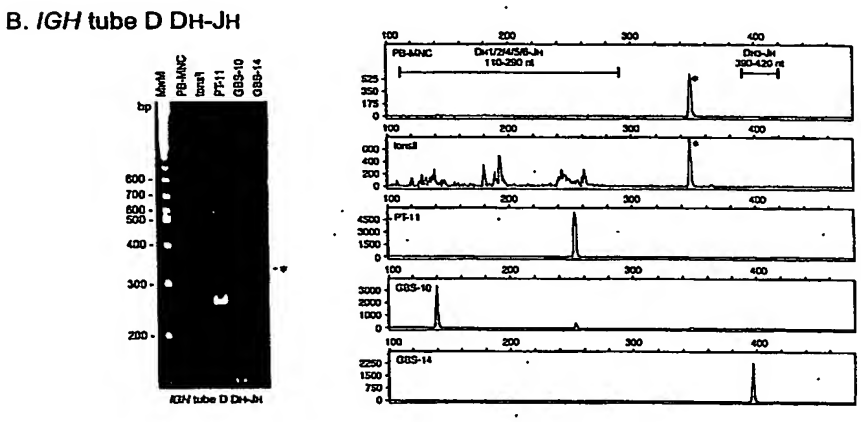
E. *IGH* tube C VH FR3-JH



IGH tube C VH FR3-JH

Figure 3 (C, D and E)





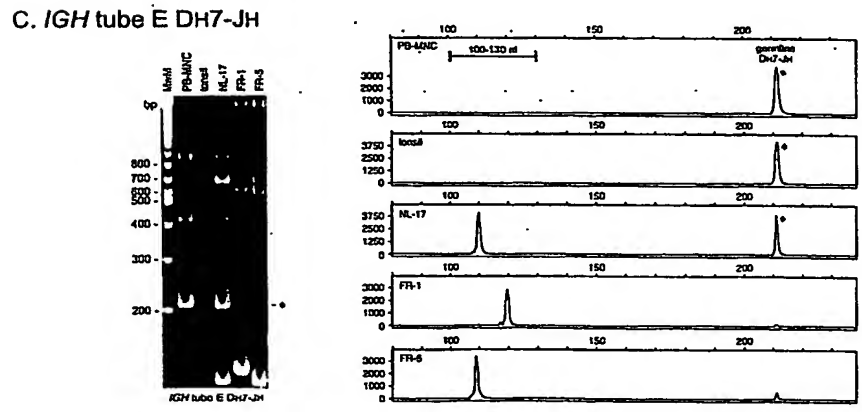


Figure 4 (A, B and C)

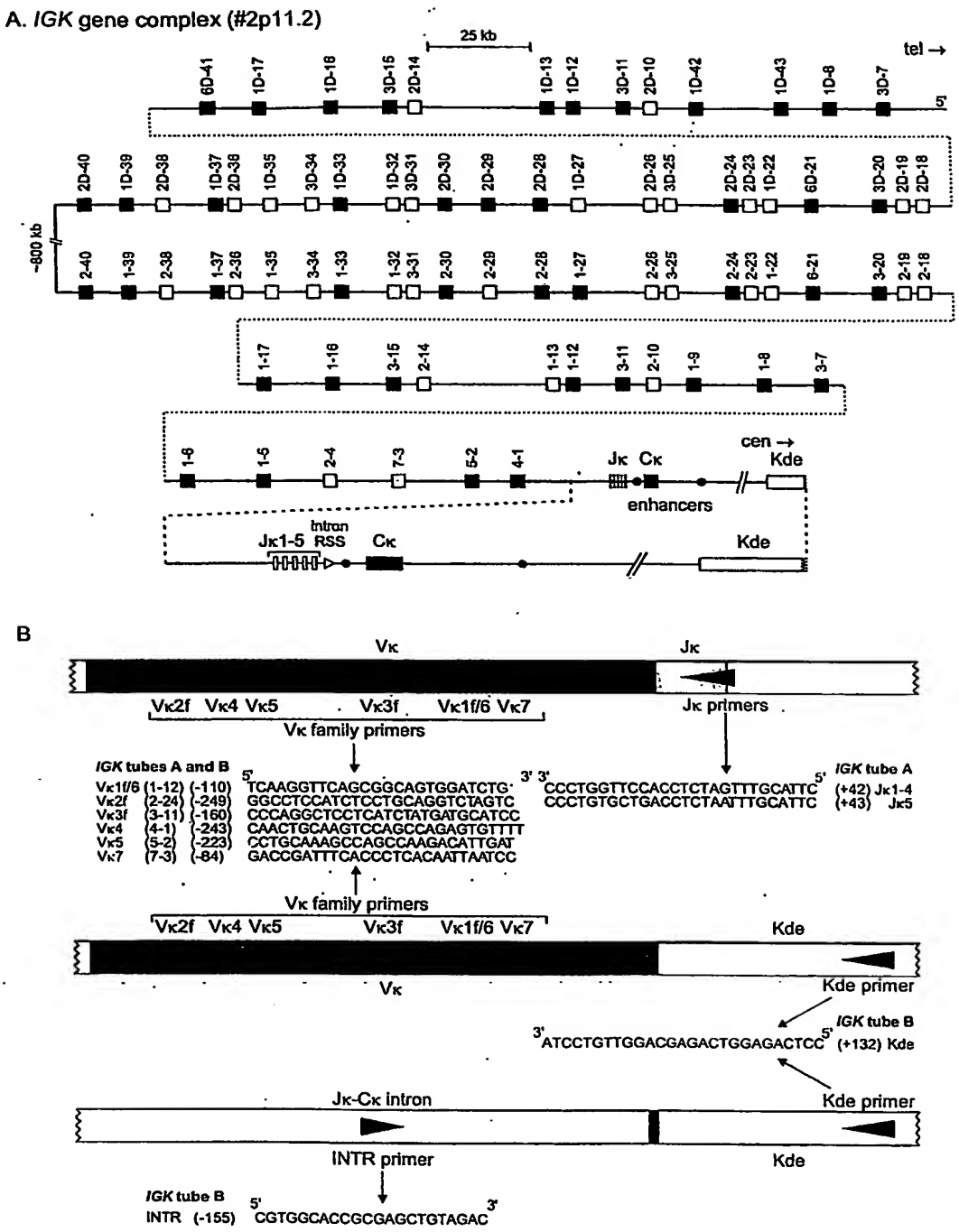
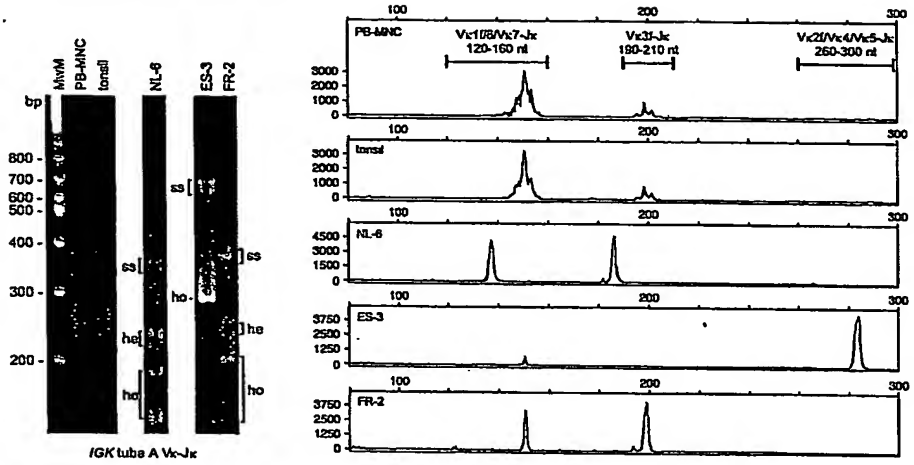


Figure 5 (A and B)

C. *IGK* tube A Vκ-Jκ



D. *IGK* tube B Vκ/intron-Kde

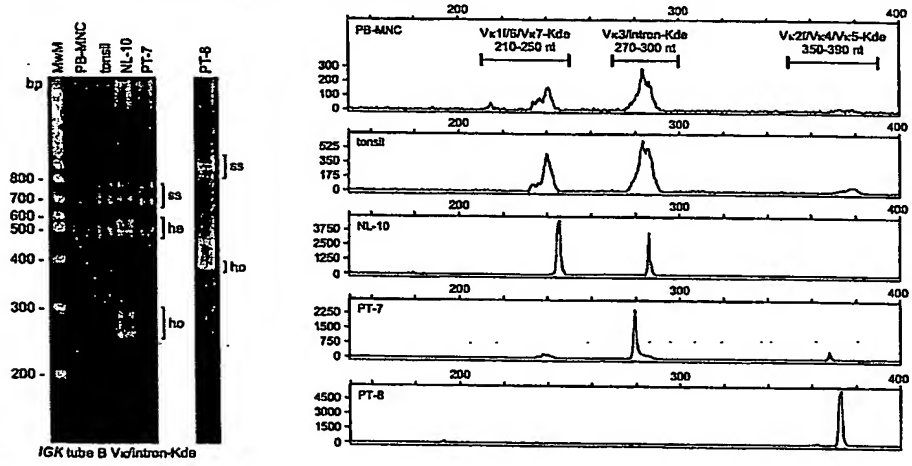
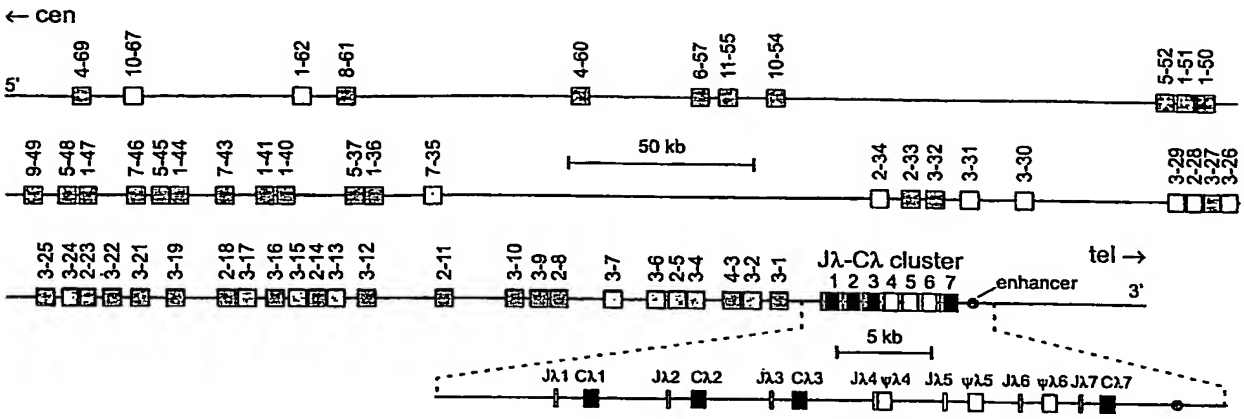
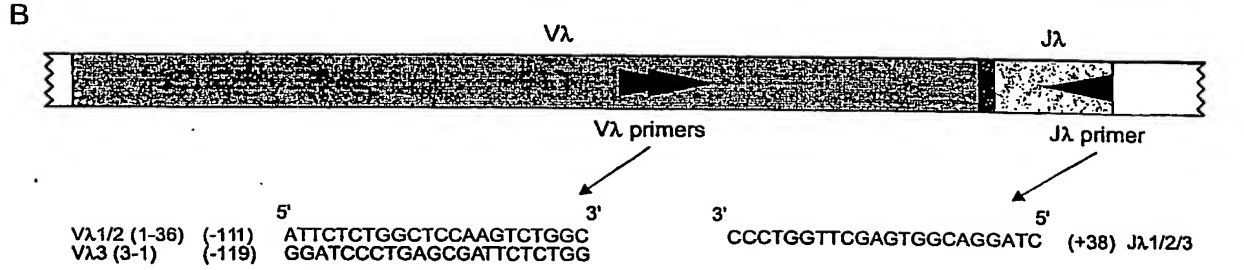


Figure 5 (C and D)

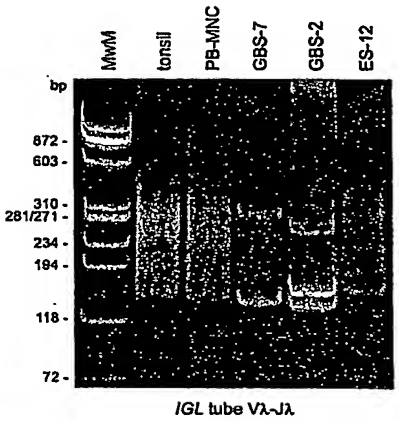
A. *IGL* gene complex (#22q11.2)



B



C. *IGL* tube Vλ-Jλ



IGL tube Vλ-Jλ

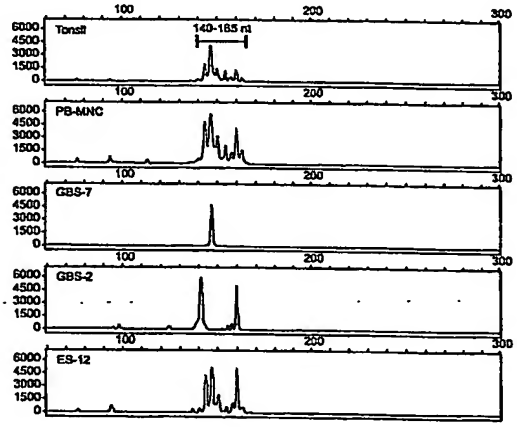
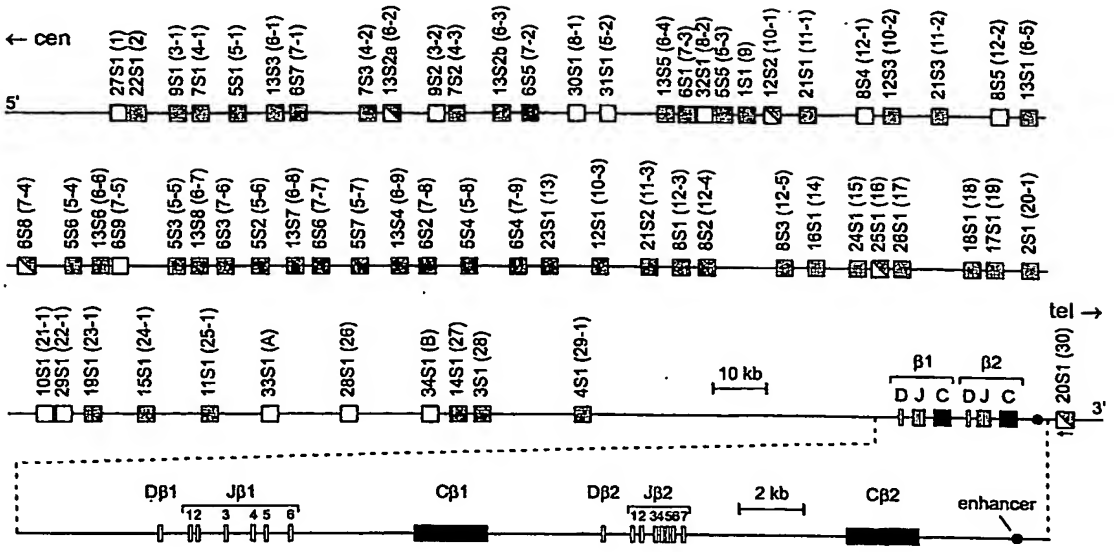


Figure 6 (A, B and C)

A. *TCRB* gene complex (#7q34)



B

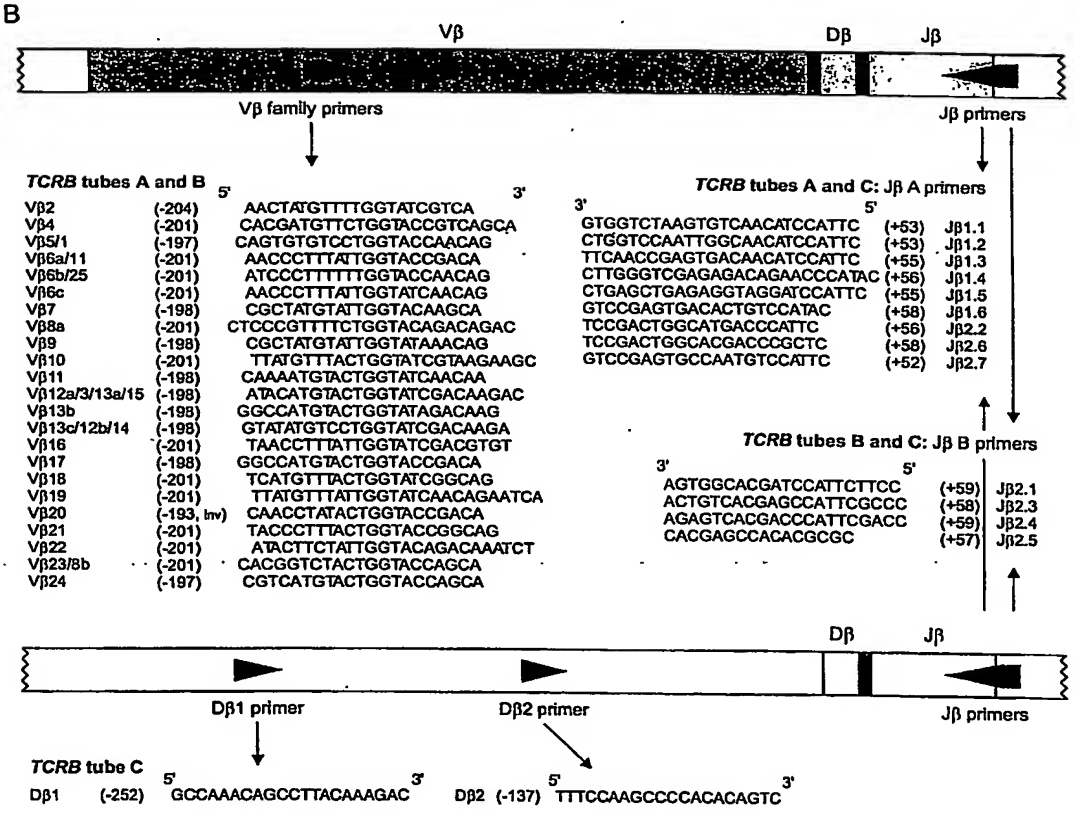
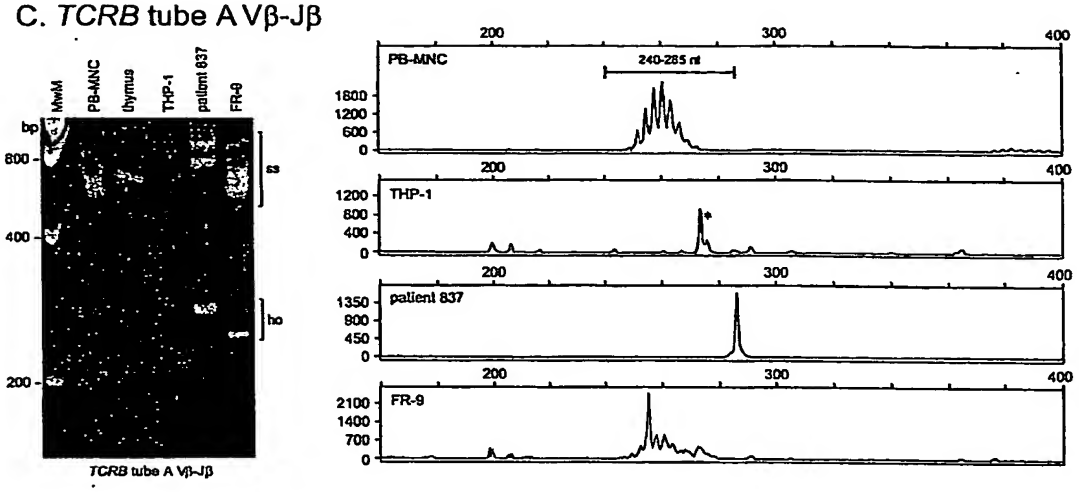
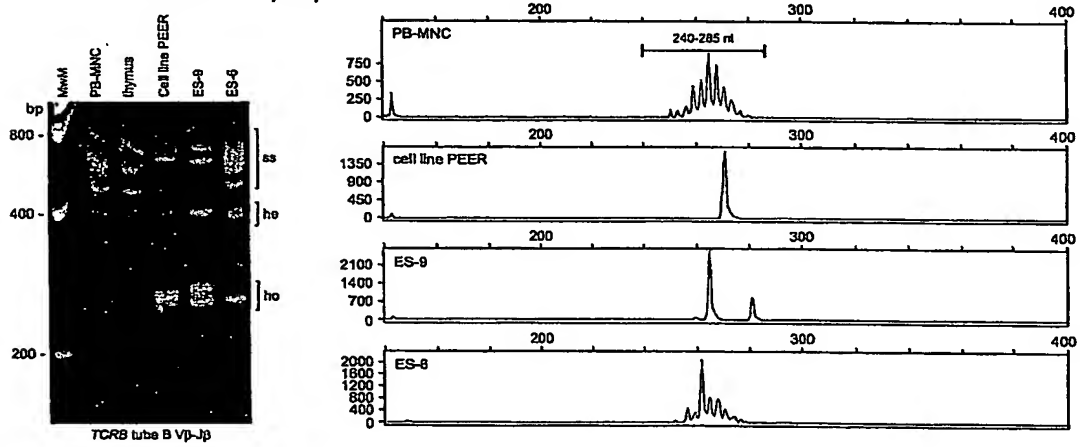


Figure 7 (A and B)

C. *TCRB* tube A Vβ-Jβ



D. *TCRB* tube B Vβ-Jβ



E. *TCRB* tube C Dβ-Jβ

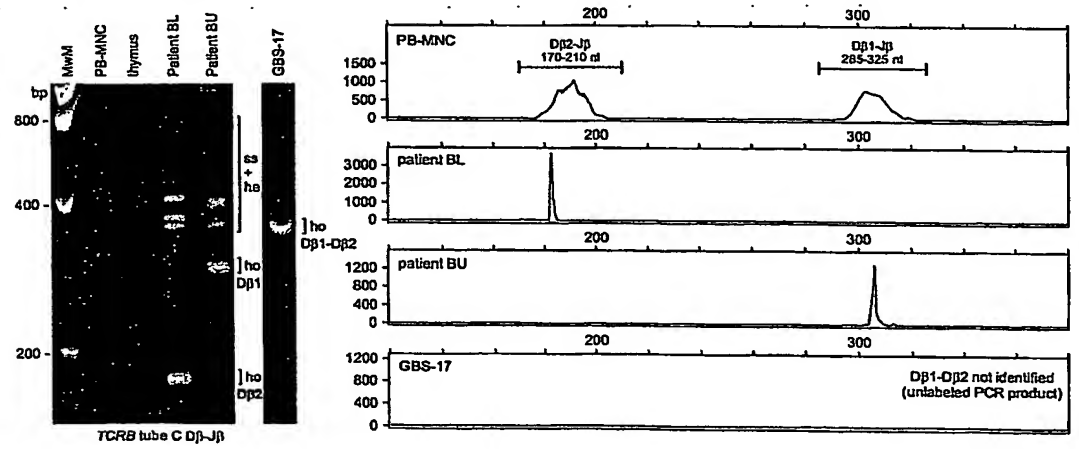
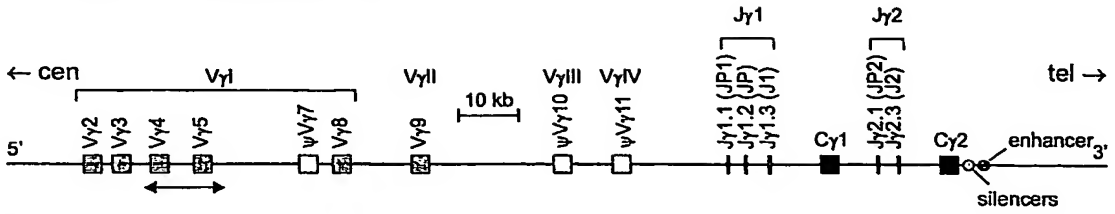
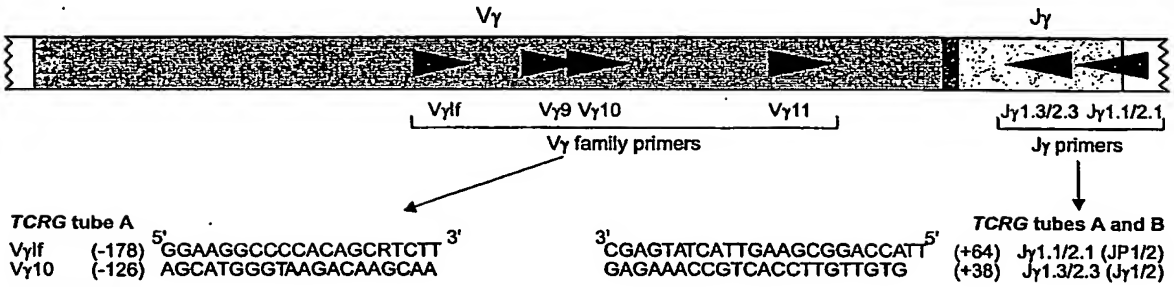


Figure 7 (C, D and E)

A. *TCRG* gene complex (#7p14)



B



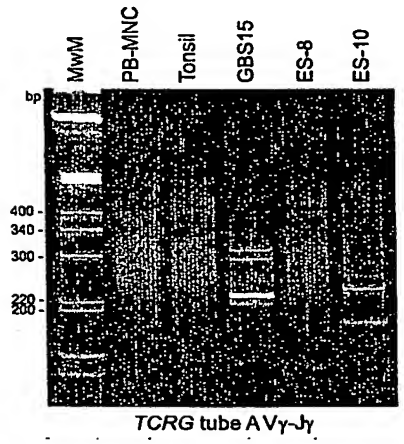
TCRG tube A

Vγf	(-178)	5' GGAAGGCCCCACAGCRTCTT 3'	3' CGAGTATCATTGAAGCGGACCATT 5'	(+64)	Jγ1.1/2.1 (JP1/2)
Vγ10	(-126)	AGCATGGGTAAGACAAGCAA	GAGAAACCGTCACCTTGTTGTG	(+38)	Jγ1.3/2.3 (Jγ1/2)

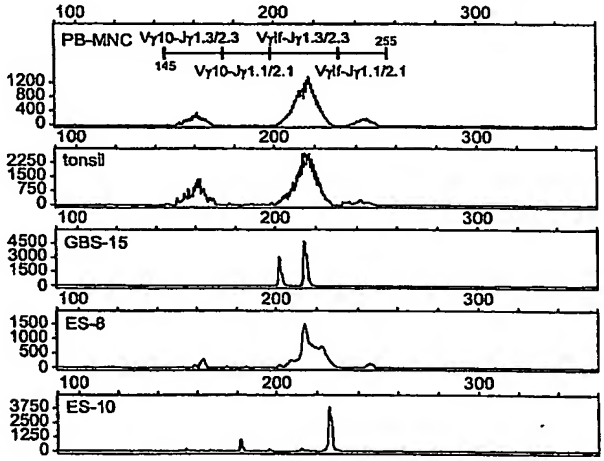
TCRG tube B

Vγ9	(-141)	CGGCACTGTCAGAAAGGAATC
Vγ11	(-58)	CTTCCACTTCCACTTTGAAA

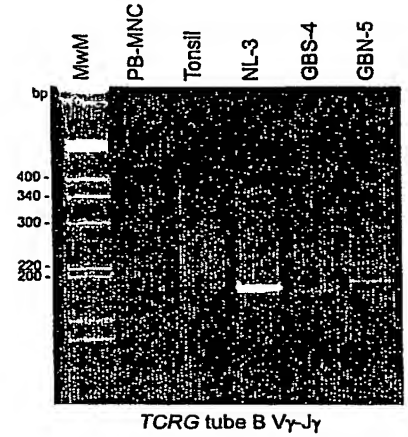
C. *TCRG* tube A Vγ-Jγ



TCRG tube A Vγ-Jγ



D. *TCRG* tube B Vγ-Jγ



TCRG tube B Vγ-Jγ

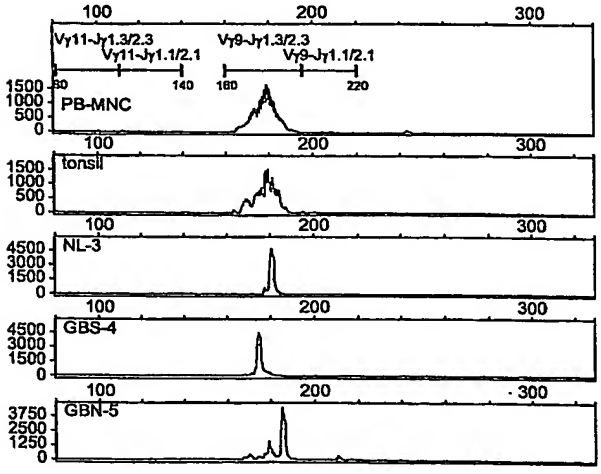
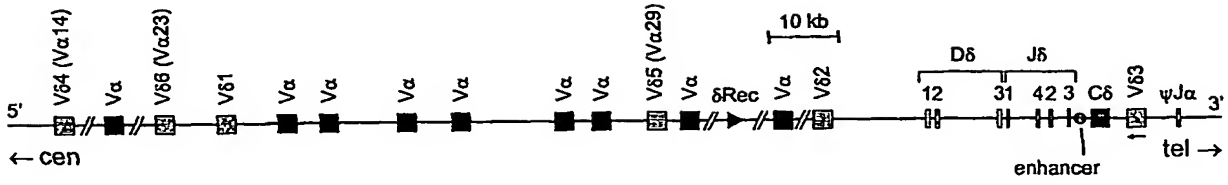
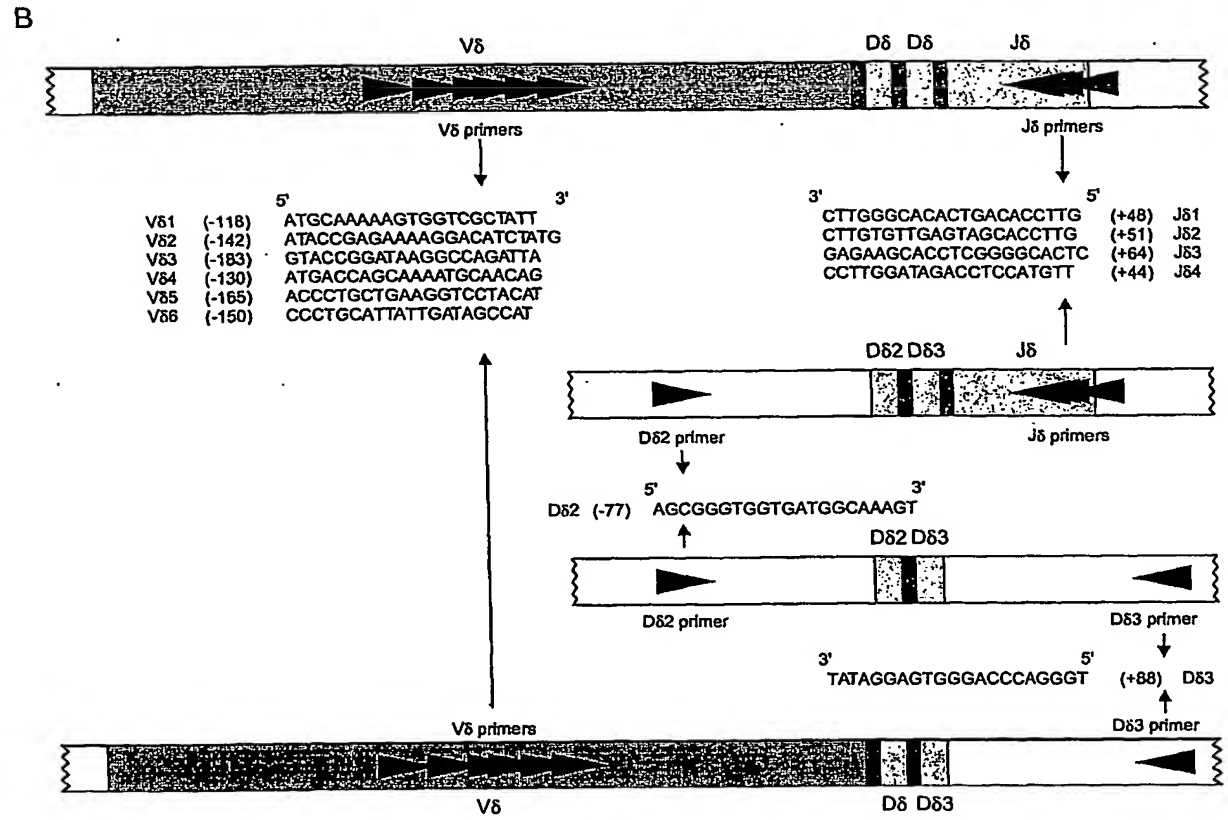


Figure 8 (A, B, C, and D)

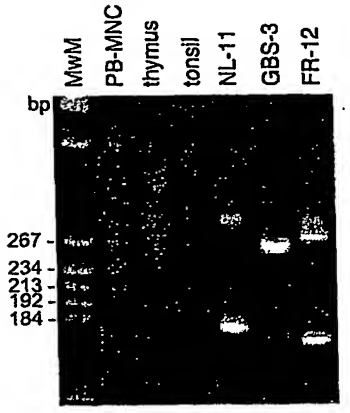
A. *TCRD* gene complex (#14q11.2)



B



C. *TCRD* tube Vδ-Jδ/Dδ-Dδ/Dδ-Jδ



TCRD tube Vδ-Jδ/Dδ-Dδ/Dδ-Jδ

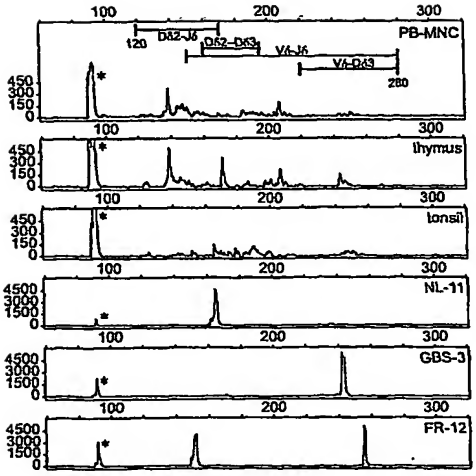
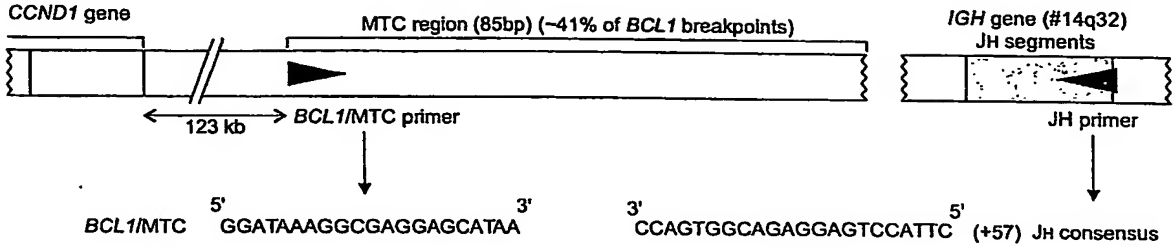
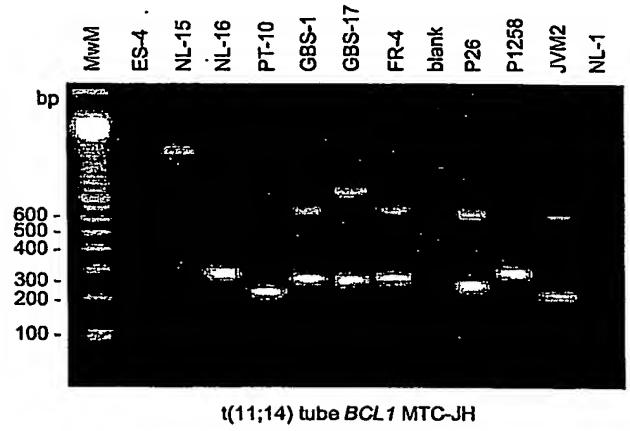


Figure 9 (A, B, and C)

A. *BCL1* locus (#11q13)



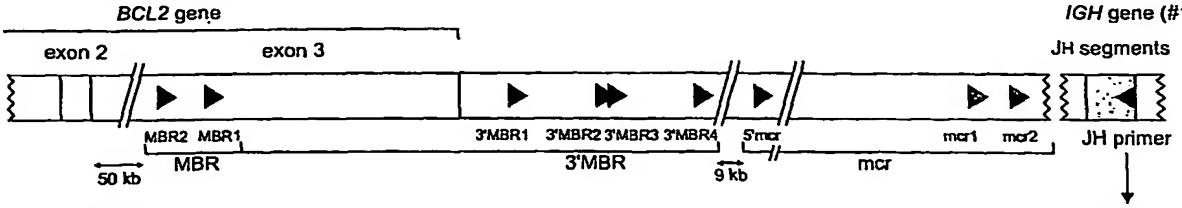
B. t(11;14) tube *BCL1* MTC-JH



t(11;14) tube *BCL1* MTC-JH

Figure 10 (A and B)

A. *BCL-2* gene (#18q21)



t(14;18) tube A: MBR primers 5' 3' 3' 5' t(14;18) tubes A, B, and C

MBR1 (3'end of exon 3) (-3072) GACCAGCAGATTCAAATCTATGG CCAGTGGCAGAGGAGTCCATTC (+57) JH consensus
MBR2 (3'end of exon 3) (-3575) ACTCTGTGGCATTATTGCATTATAT

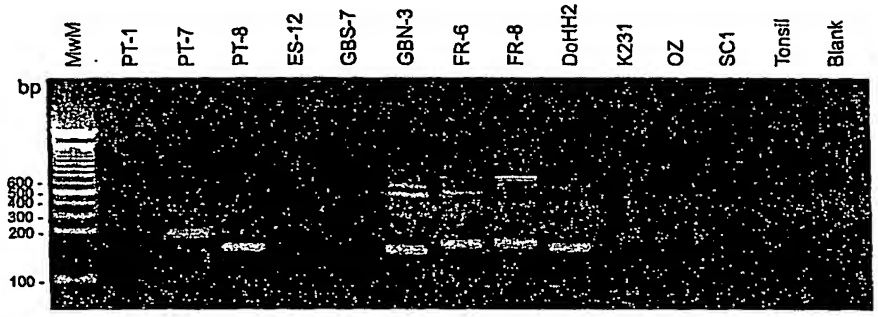
t(14;18) tube B: 3'MBR primers

3'MBR1 (3'end of exon 3) (+549) GCACCTGCTGGATACAACACTG
3'MBR2 (3'end of exon 3) (+1224) AAACTAGCAGGGTGTGGTGGC (replaced by +1362; GGTGACAGAGCAAAACATGAACA)
3'MBR3 (3'end of exon 3) (+1619 GTAATGACTGGGGAGCAAATCTT
3'MBR4 (3'end of exon 3) (+2550) ACTGGTTGGCGTGGTTTAGAGA

t(14;18) tube C: mcr primers

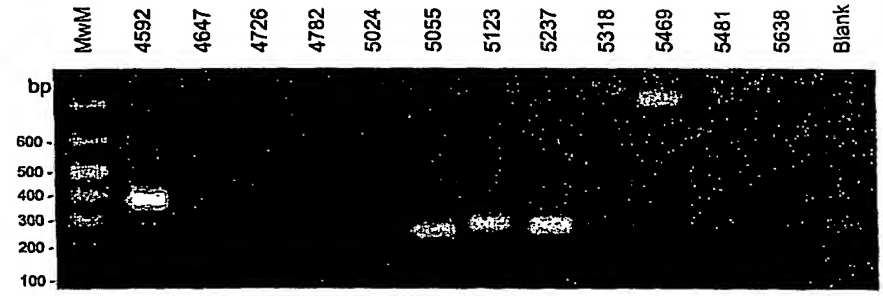
5'mcr (3'end of exon 3) (+15681) CCTTCTGAAAGAAACGAAAGCA
mcr1 (file AF275873) (+1961) TAGAGCAAGCGCCCAATAAATA
mcr2 (file AF275873) (+2407) TGAATGCCATCTCAAATCCAA

B. t(14;18) tube A *BCL2* MBR-JH



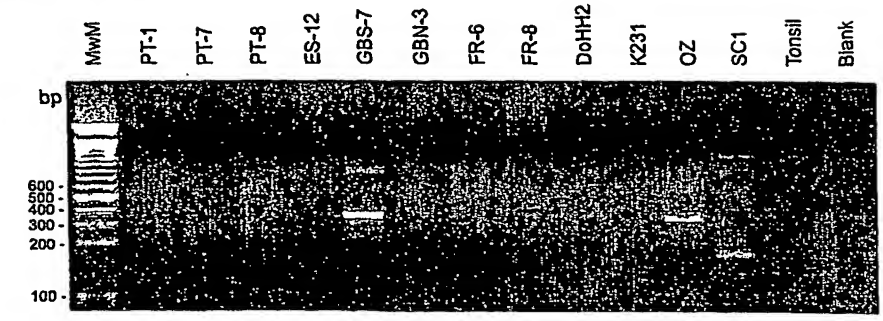
t(14;18) tube A *BCL2* MBR-JH

C. t(14;18) tube B *BCL2* 3'MBR-JH



t(14;18) tube B *BCL2* 3'MBR-JH

D. t(14;18) tube C *BCL2* mcr-JH



t(14;18) tube C *BCL2* mcr-JH

Figure 11 (A, B, C, and D)

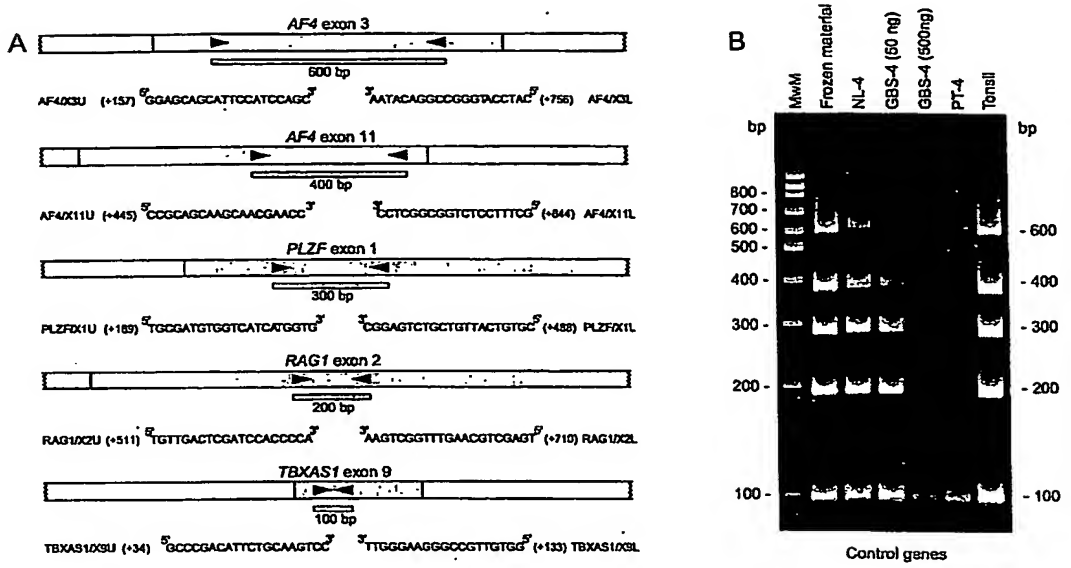


Figure 12 (A and B)

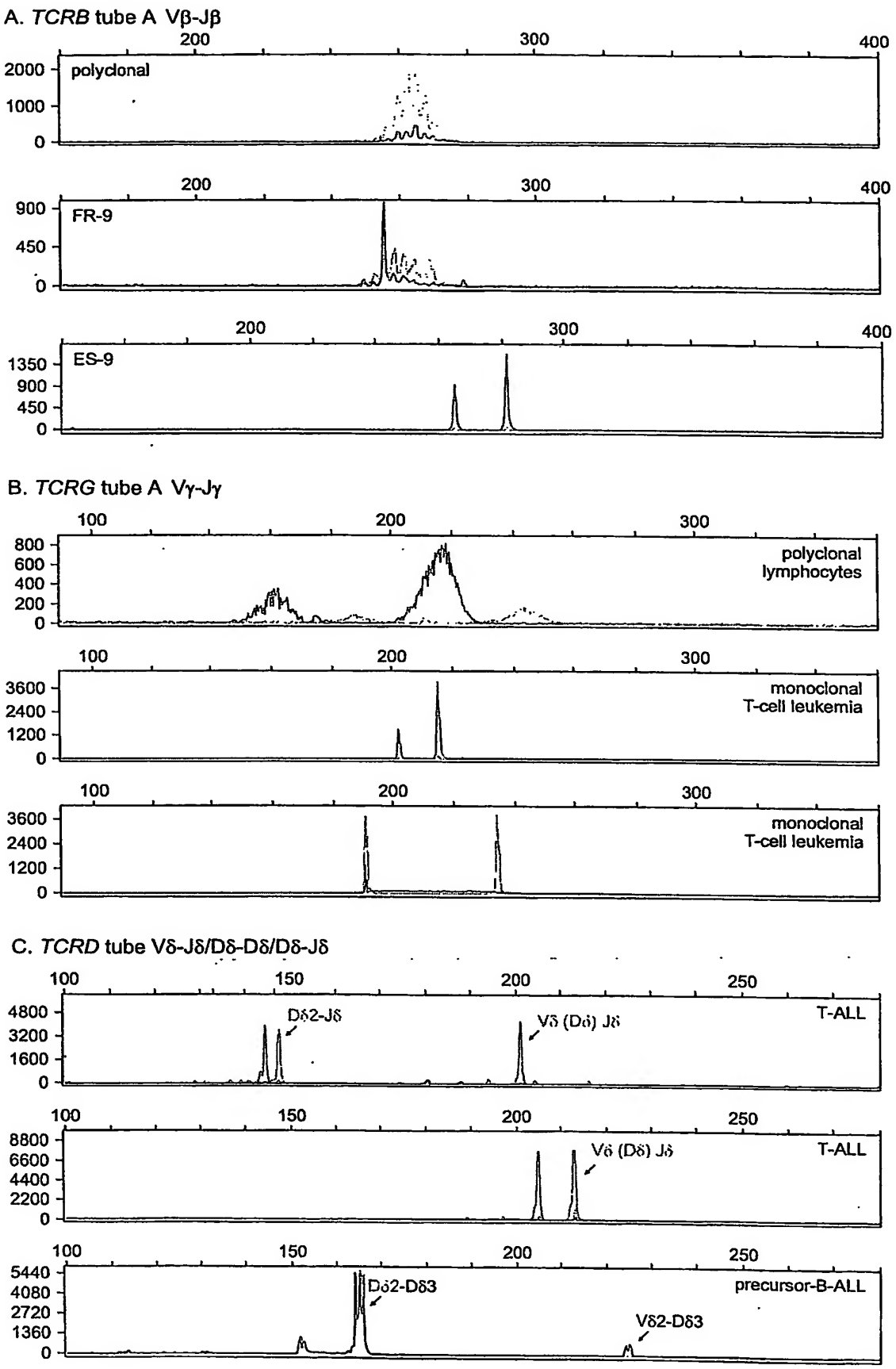


Figure 13 (A, B and C)